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requisite gift, in view of the strong probability that it will lead to a great advance in our knowledge of the heavenly bodies. Any one interested in this plan is invited to address the undersigned.

EDWARD C. PICKERING,

Director of the Observatory of Harvard College.
Cambridge, Mass., U.S.A., September, 1892.

Naltunne Tunne Measures.

WHEN the writer was at the Siletz Agency, Oregon, in 1884, he obtained the following units of measurement from Alex. Ross, the chief of the Naltunne tunne, an Athapascan people:—

1. The double arm's length, from the meeting of the tips of the thumb and forefinger of one hand to the meeting of the tips of the thumb and forefinger of the other hand.

2. Single arm's length, "one arm," extending from the tip of the middle finger along the extended arm to the shoulder-joint.

3. From the middle of the sternum along the extended arm to the meeting of the tips of the thumb and index finger.

4. From the inner angle of the elbow to the meeting of the tips of the thumb and index finger.

5. From the middle of the fore-arm to the meeting of the tips of the thumb and index finger.

6. From the first wrinkle of the wrist to the meeting of the tips of the thumb and index finger.

7. The width of the hand (when grasping a stick), "one grasp," equal to the width of four fingers (No. 11).

8. One finger width. 9. Two finger widths. 10. Three finger widths.

11. Four finger widths (the hand being open), equal to No. 7.

12. Five finger widths (including the thumb).

13. From the joint of the right shoulder horizontally across the body to the meeting of the tips of the thumb and forefinger of the extended left arm.

14. From the tip of the right elbow (the right arm being bent and held horizontally, the hand touching the shoulder) horizon-

tally across the body to the tip of the middle finger of the left hand, the left arm also being extended horizontally.

J. OWEN DORSEY.

Takoma Park, D.C., Sept. 13.

Omaha Arrow-Measure.

THE Omaha use the following as their arrow-measure: From the inner angle of the elbow to the tip of the middle finger, and thence over the back of the hand to the wrist-bone.

J. OWEN DORSEY.

Takoma Park, D.C., Sept. 13.

BOOK-REVIEWS.

Elementary Text-Book of Entomology. By W. F. KIRBY. Second Edition. Revised and augmented. Ill. New York, Macmillan & Co. 281 p. 8°. \$3.

ENTOMOLOGISTS everywhere will welcome with pleasure this new edition of Kirby's handbook of reference to the study of insects. As compared with the first edition of the work, we find the present one improved by the addition of a carefully prepared index, and by an appendix and table of contents. The appendix adds considerable new and valuable matter, while the last-named feature answers admirably to present the main divisions of the classification of insects used by the author. Various schemes of the latter are briefly discussed in the introduction, but our space will only admit of our saying here that seven orders are adopted to which the lesser groups of all insects are referred. These are the *Coleoptera* (including *Strepsitera*), *Orthoptera* (including *Euplexoptera* and *Dictyoptera*), *Neuroptera* (including *Trichoptera*, *Thysanura*, *Collembola*, *Mallophaga*, and *Thysanoptera*), *Hymenoptera*, *Lepidoptera*, *Hemiptera* or *Rhynchota* (including the suborders *Hemiptera*—*Heteroptera* and *Hemiptera*—*Hemoptera*, and the *Anophura*), and *Diptera* (including *Aphaniptera* and possibly *Achreioptera*). Our author tersely defines these several

Publications Received at Editor's Office.

DOBBIN, L. and WALKER J. Chemical Theory for Beginners. New York, Macmillan & Co. 16°. 244 p. 70 cts.
GEOLOGICAL SURVEY OF TEXAS. Annual Report, 1891. Austin, State. 8°. Paper. 470 p.
KIRBY, W. F. Elementary Text-Book of Entomology. New York, Macmillan & Co. 8°. 282 p. Ill. \$3.
WILKINSON, GEORGE. The Voice. 16°. Paper. 72 p.

Reading Matter Notices.

Ripans Tabules: for torpid liver.

Ripans Tabules banish pain.

FOR SALE.

The Paleontological Collection of the late U. P. James, of Cincinnati, Ohio. Many type specimens and thousands of duplicates. For further information address

JOSEPH F. JAMES,

U. S. Department of Agriculture,

WASHINGTON, D. C.

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TO VOLUME XVIII OF SCIENCE

is in preparation, and will be issued at an early date.

Exchanges.

[Free of charge to all, if of satisfactory character. Address N. D. C. Hodges, 874 Broadway, New York.]

For Sale or Exchange.—The subscriber would like to receive cash offers, or an offer in exchange for the earlier volumes of Poggenдорff's *Annalen* and the later volumes of Silliman's *Journal*, upon the following list: Chenn—*Manuel de Conchyliologie*. 2 vols. Nearly 5,000 figures, some hand-colored. Paper. Paris, 1859. Edwards.—*Butterflies of N. A.* 2 vols. Plates hand-colored. Vol. I., half calf. Vol. II. in parts. Leyman, Agassiz, Hagen.—*Ills. Cat. Mus. Comp. Zool.* at Harvard. No. I. *Ophiuridae*. No. II., *Acalephae*. No. III., *Astacidae*. All bound in one volume. American Naturalist. Vols. I–VII. Cloth. Silliman's *Am. Jour. of Science and Arts*. Third Series. Vols. I–X. Cloth. Binney.—*Terrestrial Mollusks of N. A.* Colored plates. 4 vols. Stretch.—*Zygaenidae and Bombycidae of N. A.* Colored plates. Also a considerable library of monographs, reports, and scientific books, and a large number of duplicates of fossils, minerals and shells. E. A. STRONG, Ypsilanti, Mich., Sept., 1892.

Exchange.—I have the finest shells of *Anodonta corpulenta*, *Cyp'r.* and *Suborbiculata*, Say, in the world. Will exchange for fresh water, land, and marine shells, in large or small quantities. Have also for exchange 50 varieties of fresh water and land shells from Spoon River, Ill. Dr. W. S. STRODE, Lewistown, Ill.

To exchange for books on birds or insects, or for back volumes of *American Naturalist*: Ecker's "Anatomy of the Frog," Packard's "Guide," Guyot's "The Earth and Man," Rockhill's, "The Land of the Lamas," Parker's "Biology," Shoemaker's "Heredity, Health and Personal Beauty," Dexter's "The Kingdoms of Nature," all new. M. J. ELROD, Ill. Wes. Univ., Bloomington, Ill.

For Sale.—About 1087 volumes of the private library of Dr. Nicolas León, formerly director of the Museum at Morelia, embracing publications of special value for Mexicoologists, like those of Bishop Zumárraga (16th century), of Sigüenza y Gongora, of Aleman, etc., the *Missal* of Spinoza, all very scarce; manuscripts on the history of Michoacán and other Mexican States, on the Tarasco (the Indian language of Michoacán) and several works, of which the only copy known to exist is in this collection. Parties interested in the sale please address Dr. NIC. LEÓN, Portal de Matamoras, Morelia, Mexico.

Wants.

METALLURGICAL CHEMIST will give instruction in the metallurgy and chemical analysis of iron and steel. Complete or special courses applying to the manufacture of pig irons and steels, as well as to their uses. Address "METALLURGIST," care SCIENCE.

A GRADUATE of the University of Pennsylvania and a practical mineralogist of twenty years' experience desires to give his services and a cabinet of 25,000 specimens, all named, with about the same number of duplicates, in minerals, crystals, rocks, gems, fossils, shells, archaeological and ethnological specimens and woods to any institution desiring a fine outfit for study. The owner will increase the cabinet to 50,000 specimens in two years and will act as curator. Correspondence solicited from any scientific institution. J. W. HORTER, M.D., Ph.D., San Francisco, Cal., General P. O. Delivery.

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CHEMIST AND ENGINEER, graduate German Polytechnic, Organic and Analytical, desires a position in laboratory or chemical works. Address 213½ E. 7th Street, New York, care Levy.

A MAN, 36 years old, of extensive experience, having the degrees of A.M. and Ph.D., desires a first-class opening as a teacher of Zoology and kindred studies in a college or university. Can furnish numerous testimonials or references as to success and skill in most modern laboratory methods. Address E. W. D., Md. Agr. College, College Park, Md.

A JOHNS HOPKINS graduate (1892) desires a position as instructor in mathematics and physics. Address A. B. TURNER, Johns Hopkins University, Baltimore, Md.

A YOUNG MAN, with a thorough training in Analytical Chemistry (including analysis of minerals, food, water, etc.), and holding a diploma of the School of Practical Science, of Toronto, and good testimonials, desires a position as Analytical Chemist or as assistant to such. Address to WM. LAWSON, 16 Washington Ave., Toronto, Ontario.